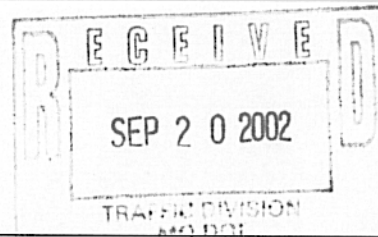


Specification Subcommittee: _____
Engineering Policy Comm: _____
Team Leader: Julie Stotlemeyer



Attachment 1

Rev 02-XX
Submitted by
(Date)

Team Members and Resources			
Julie Stotlemeyer	Llans Taylor		

(Rationale: Updated to current spec writing rules.)

SECTION 1060

ELECTRICAL CONDUIT

1060.1 Scope. This specification covers electrical conduit to be used as specified elsewhere in the ~~specifications~~ or as shown on the plans.

1060.2 Acceptance. All material in this section will be accepted based on certification indicating the material is in accordance with the requirements of the specification and any testing as required by the engineer.

1060.3 Material. Electrical conduit shall be in accordance with the required specification.

*I'm not sure
if this adds anything
I'd strike it*

1060.3.1 Rigid Metallic Conduit and Tubing. This specification covers (1) zinc-coated rigid steel conduit, (2) intermediate metal conduit, (3) rigid aluminum conduit, (4) zinc-coated electrical metallic tubing and (5) fittings for rigid metal conduit, intermediate metal conduit and electrical metallic tubing.

1060.1.1

1060.3.1.1 Rigid Steel Conduit, Zinc Coated. This material Rigid steel conduit, zinc coated shall conform to the requirements of ~~be in accordance with~~ ANSI C80.1, except the conduit shall be galvanized on both the inside and the outside surfaces by the hot-dip process. The weight (mass) of zinc coating shall be not less than 0.5 ounce per square foot (0.15 kg/m²) of actual coated surface determined in accordance with AASHTO T 65. The zinc coating shall meet the requirements ~~be in accordance with~~ ANSI C80.1 for ductility regardless of the time of manufacture of the conduit. The interior or exterior surfaces, or both, may be given a coating of suitable material to facilitate installation of wires and cables and to permit the conduit to be readily distinguished from pipe used for other than electrical purposes.

*Isn't this
repeating the
first sentence
can they be
combined?*

1060.13.1.2.2 Intermediate Metal Conduit. This material Intermediate metal conduit shall conform to the requirements of ~~be in accordance with~~ UL 1242. The exterior surface shall be galvanized. The weight (mass) of zinc coating shall be not less than 0.5 ounce per square foot (0.15 kg/m²) of actual coated surface determined in accordance with AASHTO T 65. The zinc coating shall meet the ~~be in accordance with~~ ANSI C80.1 requirements for ductility regardless of the time of manufacture of the conduit. The interior surface shall be coated in accordance with UL 1242. The interior and exterior surfaces, or both, may be given a coating of suitable material to facilitate installation of wires and cables and to permit the conduit to be readily distinguished from pipe used for other than electrical purposes.

1060.13.1.3.3 Rigid Aluminum Conduit. This material Rigid aluminum conduit shall conform to the requirements of ~~be in accordance with~~ ANSI C80.5.

1060.13.1.4.4 Electrical Metallic Tubing, Zinc Coated. This material Electrical metallic tubing, zinc coated shall conform to the requirements of ~~be in accordance with~~ ANSI C80.3 except the weight (mass) of zinc coating shall be not less than 0.5 ounce per square foot (0.15 kg/m²) of coated surface, as

determined in accordance with AASHTO T 65. The zinc coating shall ~~meet the requirements~~ be in accordance with ANSI C80.3 for ductility regardless of the time of manufacture of the tubing.

1060.13.1.5.5 Fittings for Rigid Metal Conduit and Electrical Metallic Tubing. Fittings shall ~~conform to the requirements of~~ be in accordance with ANSI C80.4.

1060.13.1.6.6 Fittings for Intermediate Metal Conduit. Fittings shall ~~conform to the requirements of~~ be in accordance with UL 1242, except the coating shall meet the same requirements as the conduit with which the fittings are used.

1060.1.73.1.7 Inspection. Conduit, tubing and fittings will be inspected for compliance with the specifications, ~~and any~~ ^{at least} desired samples will be taken at either the project location or warehouse, ~~at the option of~~ as directed by the engineer. Test specimens for determination of weight (mass) of coating will be ~~not less than~~ 2 inches (50 mm) long, cut not less than 6 inches (150 mm) from the end of the length of conduit or tubing selected for testing. If the prescribed two additional samples for retests are taken, and either does not comply, the lot represented will be rejected.

1060.1.8 Certifications. ~~If requested by the engineer, the contractor shall furnish three copies of the a manufacturer's certification in triplicate, showing typical test results representative of the material, and certifying that the material supplied conforms to is in accordance with all of the requirements specified. If requested by the engineer, the contractor shall also furnish typical test results representative of the material.~~

1060.2-3.2 Rigid Nonmetallic Conduit. Rigid nonmetallic conduit shall be ~~made of~~ either polyvinyl chloride (PVC) or heavy duty polyethylene (PE).

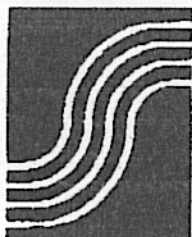
Spell out in title
1060.3.2.1 (PVC) Conduit. PVC conduit, bends, couplings and fittings shall ~~conform to the requirements of~~ be in accordance with Underwriters Laboratories Standard UL 651.

1060.23.2.2 Heavy Duty (PE) Conduit. Heavy duty PE conduit shall ~~conform to the requirements of~~ be in accordance with ASTM D 3035 SDR11.

1060.23.2.3 Inspection. ^M~~The~~ material will be inspected for compliance with the specifications, and desired samples will be taken at either the project location or warehouse, ~~at the option of~~ as directed by the engineer.

1060.2.4 Certification. The contractor shall furnish three copies of the a manufacturer's certification, ~~in triplicate, certifying that the material supplied conforms to is in accordance with~~ all the requirements specified. If requested by the engineer, the contractor shall also furnish typical test results representative of the material.

SI



SCHAEFFER Marketing Group

Incorporated

5427 TELEGRAPH RD.
ST. LOUIS, MO 63129
ELECTRICAL MANUFACTURERS' REPRESENTATIVE

Attachment 2

PHONE: 314/894-1100
FAX: 314/894-2155
E-MAIL: smgreg@marz.com
WEB SITE: www.smgrep.com

9/27/02

Julie Stotlemeyer
Signal and Lighting Engineer
MODOT
P.O. Box 270
Jefferson City, MO 65102

Dear Julie:

On behalf of Carlon we would suggest the following changes.

Section 1060.2.3.2: Change "heavy duty" to "high density" and "PE" to "HDPE."

Section 1062.3.2.1: Add a reference to NEMA standard TC-2 for conduit. Also, PVC fittings shall be UL listed and conform to NNEMA TC-3. Cement shall be by the same manufacturer as the fittings and conduit. "For Directional Boring applications, a special PVC conduit known as Boregard may be used."

Section 1062.23.2.2: Change "Heavy Duty" to "High Density Polyethylene (HDPE)."

Suggest Adding: "Color shall be black with three red stripes for all line voltage applications and shall be UL listed. HDPE shall be installed in continuous lengths and not spliced by any method. Fittings for HDPE can be of PVC if joined by a special epoxy approved by MODOT for the purpose. Other non-metallic mechanical fittings especially designed for the purpose may also be approved."

Thank you for your consideration and allowing us an opportunity to review the Spec.

Sincerely,

Mike Schaeffer, PE
Schaeffer Marketing Group

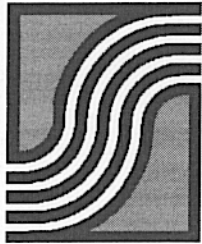
*cannot continue
Manufacturers
Recommendation*

*Continue
tape added
in trench.
Don't care if
spliced*

added w/ mod.



NATIONAL ELECTRICAL MANUFACTURERS
REPRESENTATIVES ASSOCIATION



SCHAEFFER Marketing Group

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5427 TELEGRAPH RD.
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ELECTRICAL MANUFACTURERS' REPRESENTATIVE



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9/27/02

Julie Stotlemeyer
Signal and Lighting Engineer
MODOT
P.O. Box 270
Jefferson City, MO 65102

Dear Julie:

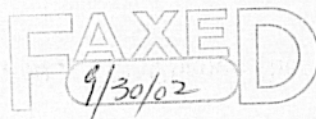
On behalf of Carlon we would suggest the following changes.

Section 1060.2.3.2: Change "heavy duty" to "high density" and "PE" to "HDPE."

Section 1062.3.2.1: Add a reference to NEMA standard TC-2 for conduit. Also, "PVC fittings shall be UL listed and conform to NNEMA TC-3. Cement shall be by the same manufacturer as the fittings and conduit." "For Directional Boring applications, a special PVC conduit known as Boregard may be used."

Section 1062.23.2.2: Change "Heavy Duty" to "High Density Polyethylene (HDPE)." Suggest Adding: "Color shall be black with three red stripes for all line voltage applications and shall be UL listed. HDPE shall be installed in continuous lengths and not spliced by any method. Fittings for HDPE can be of PVC if joined by a special epoxy approved by MODOT for the purpose. Other non-metallic mechanical fittings especially designed for the purpose may also be approved."

Thank you for your consideration and allowing us an opportunity to review the Spec.



Sincerely,

Mike Schaeffer, PE
Schaeffer Marketing Group



NATIONAL ELECTRICAL MANUFACTURERS
REPRESENTATIVES ASSOCIATION

Attachment 3
REV 02-XXSubmitted by
(Date)

Specification Subcommittee: _____
 Engineering Policy Comm: _____
 Team Leader: _____

Team Members and Resources			
Julie Stotlemeyer	Llans Taylor		
John Schaeffer, SSI	Revised 9/19/02		

(Rationale: Updated to current spec writing rules.)

Entered in same *Q*

SECTION 1060

ELECTRICAL CONDUIT

1060.1 Scope. This specification covers electrical conduit to be used as specified elsewhere in the specifications or as shown on the plans.

1060.2 Acceptance. All material in this section will be accepted based on certification indicating the material is in accordance with the requirements of the specification and any testing as required by the engineer.

1060.3 Material. Electrical conduit shall be in accordance with the required specification.

1060.3.1 Rigid Metallic Conduit and Tubing. This specification covers (1) zinc-coated rigid steel conduit, (2) intermediate metal conduit, (3) rigid aluminum conduit, (4) zinc-coated electrical metallic tubing and (5) fittings for rigid metal conduit, intermediate metal conduit and electrical metallic tubing.

1060.1.1

1060.3.1.1 Rigid Galvanized Steel Conduit, Zinc Coated. This material Rigid Galvanized Steel (RGS) Conduit, zinc coated shall conform to the requirements of be in accordance with UL 6 and ANSI C80.1, except the conduit shall be galvanized on both the inside and the outside surfaces by the hot dip process. The weight (mass) of zinc coating shall be not less than 0.5 ounce per square foot (0.15 kg/m²) of actual coated surface determined in accordance with AASHTO T 65. The zinc coating on the exterior surface shall be equivalent to a minimum thickness of .0008 inches (0.02 mm). The zinc coating shall meet the requirements be in accordance with ANSI C80.1 for ductility regardless of the time of manufacture of the conduit. The interior or exterior surfaces, or both, may be given a coating of suitable material to facilitate installation of wires and cables and to permit the conduit to be readily distinguished from pipe used for other than electrical purposes.

1060.13.1.2.2 Intermediate Metal Conduit. This material Intermediate Metal Conduit (IMC) shall conform to the requirements of be in accordance with UL 1242 and ANSI C80.6. The zinc coating on the exterior surface shall be equivalent to a minimum thickness of .0008 inches (0.02 mm) galvanized. The weight (mass) of zinc coating shall be not less than 0.5 ounce per square foot (0.15 kg/m²) of actual coated surface determined in accordance with AASHTO T 65. The zinc coating shall meet the be in accordance with ANSI C80.6 requirements for ductility regardless of the time of manufacture of the conduit. The interior surface shall be coated in accordance with ANSI C80.6 UL 1242. The interior and exterior surfaces, or both, may be given a coating of suitable material to facilitate installation of wires and cables and to permit the conduit to be readily distinguished from pipe used for other than electrical purposes.

1060.13.1.3.3 Rigid Aluminum Conduit. This material Rigid Aluminum Conduit (RAC) shall conform to the requirements of be in accordance with UL Standard 6 and ANSI C80.5.

OK 1060.13.1.4.4 Electrical Metallic Tubing, Zinc Coated. ~~This material Electrical Metallic Tubing (EMT), zinc coated shall be mild steel, electrically welded, galvanized and conform to the requirements of be in accordance with UL Standard 797 and ANSI C80.3. The zinc coating on the exterior surface shall be equivalent to a minimum of .0008 inches (0.02 mm). The zinc coating shall be in accordance with ANSI C80.3 for ductility regardless of the time of manufacture of the tubing. The interior and exterior surfaces, or both, may be given a coating of suitable material to facilitate installation of wires and cables and to permit the conduit to be readily distinguished from pipe used for other than electrical purposes, except the weight (mass) of zinc coating shall be not less than 0.5 ounce per square foot (0.15 kg/m²) of coated surface, as determined in accordance with AASHTO T-65. The zinc coating shall meet the requirements be in accordance with ANSI C80.3 for ductility regardless of the time of manufacture of the tubing.~~

1060.13.1.5.5 Fittings for Rigid Metal Conduit and Electrical Metallic Tubing. Fittings shall conform to the requirements of be in accordance with ANSI C80.4.

1060.13.1.6.6 Fittings for Intermediate Metal Conduit. Fittings shall conform to the requirements of be in accordance with UL 1242, except the coating shall meet the same requirements as the conduit with which the fittings are used.

1060.1.7.3.1.7 Inspection. Conduit, tubing and fittings will be inspected for compliance with the specifications, and any desired samples will be taken at either the project location or warehouse, at the option of as directed by the engineer. Test specimens for determination of weight (mass) of coating will be not less than 2 inches (50 mm) long, cut not less than 6 inches (150 mm) from the end of the length of conduit or tubing selected for testing. If the prescribed two additional samples for retests are taken, and either does not comply, the lot represented will be rejected.

1060.1.8 Certifications. ~~If requested by the engineer, the contractor shall furnish three copies of the a manufacturer's certification in triplicate, showing typical test results representative of the material, and certifying that the material supplied conforms to is in accordance with all of the requirements specified. If requested by the engineer, the contractor shall also furnish typical test results representative of the material.~~

1060.2-3.2 Rigid Nonmetallic Conduit. Rigid nonmetallic conduit shall be made of either polyvinyl chloride (PVC) or heavy duty polyethylene (PE).

1060.3.2.1 PVC Conduit. PVC conduit, bends, couplings and fittings shall conform to the requirements of be in accordance with Underwriters Laboratories Standard UL 651 and 651-A. — Do I want Ebor A want sch 40? 80

1060.23.2.2 Heavy Duty PE Conduit. Heavy duty PE conduit shall conform to the requirements of be in accordance with ASTM D 3035 SDR11.

1060.23.2.3 Inspection. The material will be inspected for compliance with the specifications, and desired samples will be taken at either the project location or warehouse, at the option of as directed by the engineer.

1060.2.4 Certification. The contractor shall furnish three copies of the a manufacturer's certification, in triplicate, certifying that the material supplied conforms to is in accordance with all the requirements specified. If requested by the engineer, the contractor shall also furnish typical test results representative of the material.

Team Leader:	Julie Stotlemeyer			
Team Members:	Llans Taylor			
John Schaeffer, Schaeffer Sales				

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From:

[illegible]

ANSI C89.1
= standard shows
what we have
w/ (GCC)
red by ANSI
may not apply;
but MOD uses
- Same API
reference by
choice of
MOD